EFJohnson
Catalog

EFJohnson
Our Mission—Your Safety

Warranty Plus℠ … A Customer Service Program for EFJohnson Radio Products

The *Warranty Plus℠* program extends the warranty of your EF Johnson radio products for a period of one, two, or three years after the standard warranty expires. Similar to an insurance policy, Warranty Plus coverage must be purchased up front. End-users interested in the *Warranty Plus* program will be required to buy within 120 days of radio purchase.

The *Warranty Plus Customer Advantage*

- Additional warranty for a low monthly rate. The full cost of *Warranty Plus* coverage is payable at time of radio purchase (or within 120 days).
- *Warranty Plus* is a factory backed, extended warranty program. There are no second or third party warrantors. *Warranty Plus* customers deal strictly with EFJohnson or selected, authorized dealers.
- No deductibles or limits on the number of covered repairs.
- The initial *Warranty Plus* invoice is the only service invoice the customer will handle for three, four, or five years on covered repairs, thereby reducing both his purchasing and accounts payable costs.
- At today's rising costs of labor and major parts assemblies, one service charge could easily equal two or three times the original cost of *Warranty Plus* extended warranty coverage.
- Equipment users do not have to live with minor problems as they wait for problems to become major enough to justify a service request.
- Reduced downtime as users may immediately request service without concern for purchase orders or budgetary constraints.

Warranty Plus Price Schedule

	Extended Coverage Period	Part Number	Dlr/Fed Price	List
Mobile Radios	1 Year	299-0045-016	$20.00	$ 31.00
	2 Years	299-0045-012	$35.00	$ 55.00
	3 Years	299-0045-028	$75.00	$117.00
Handheld Radios	1 Year	299-0045-017	$23.00	$ 36.00
	2 Years	299-0045-013	$35.00	$ 55.00
	3 Years	299-0045-029	$78.00	$121.00
Repeater	1 Year	299-0045-060	$286.00	$440.00
	2 Years	299-0045-061	$546.00	$840.00
	3 Years	299-0045-062	$812.00	$1,250.00

All prices are per unit on a one-time buy basis.

Please contact EFJohnson Order Administration at 800-328-3911 x1 if you have any questions.

PRICE EFFECTIVE 1/5/05

Prices subject to change without notice.

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Portable Radio Bid Specification Instructions

The following document is a master bid specification for the EFJohnson 5100 and 51SL portable radio. This document should be tailored to meet the customers' specific needs. Feel free to delete sections not required by the bid.

The following sections should be tailored.

General Specification

- Battery life is different for portable radios with or without encryption, select one
- Factory Mutual, select if required

Features

- Protocols (try to keep in all the protocols)
- Encryption, select the required types

RF Specifications

- Delete the columns not required

Key competitive specifications we should try to keep in the spec.

General Specification

- Battery life, 12 hours (7/800 MHz only) is better than the XTS2500 and XTS 5000
- Color housing – available with the 5100 but not the 51SL – is only available with the XTS5000

Features

- 512 channel/talkgroup (Available standard on the Motorola XTS5000, priced option for the XTS2500)
- Priority Channel/talkgroup scan is better than the XTS2500
- DES, DES-OFB or AES encryption is available on the Motorola XTS2500 (June 2006) For both DES and AES, Motorola must quote the XTS5000
- Multiple encryption keys is standard with 51SL and 5100, for Motorola it is a priced option.
- MDC1200 signaling is not available on ICOM and M/A Com at this time.

RF Specifications

- FM Hum and Noise is better than XTS2500

Other

- 3 year extended warranty offering available. (Motorola has capability to offer 3 year warranty but this is not standard).

Portable Two-Way Portable Radio Specification

General Specifications:	Compliance Yes/No
Mechanical	
Dimensions without antenna H x W x D maximum 7 x 17 x 5 cm	
Weight with extra high capacity battery, maximum 700g	
Optional housing colors (5100), yellow and/ or orange	
Top mounted On/Off Volume rotary switch	
Top mounted 16 position rotary switch	
Programmable 3 position Top mounted switch	
Top mounted emergency/home button, color coded to easy visibility	
Minimum 4 programmable front mounted buttons	
Minimum 3 programmable side mounted buttons	
Optional 12 button DTMF keypad	
Minimum one line, 10 character display	
Transmit/Receive LED	
Minimum 8 MB of Flash Memory	
Battery Life (5/5/90)	
- minimum 12 hours (7/800 MHz only)	
- minimum 9 hours (VHF and UHF)	
Environmental	
Mil spec C, D, E, &F. Vender shall define method and procedure met	
for the following categories	
- Rain/Blow rain	
- Salt Fog	
- Dust and Sand	
- Vibration	
- Shock	
Factory Mutual for radio, batteries and accessories	
Intrinsically Safe	
Meets Class I & II, Division 1, C,D,E,F,G	
Meets Class III, Division 1	
Non-Incendive	
Meets Class I, Division 2, A,B,C,D	

Features:	**Compliance Yes/No**
General	
Supports up to 512 channels/talk groups	
Operational Modes and Protocols shall be field flash upgradeable	
Surveillance mode feature	
Programmable soft power down feature to prevent accidental power off	
User selectable high/low Transmit power feature	
Operational Modes:	
Supports 25/12.5 KHz analog operation	
Supports 12.5 P25 CAI digital operation	
Protocols	
Analog Conventional operation	
- Priority Channel scan	
- MDC 1200 PTT ID and Emergency	
- Programmable single tone encode	
- DTMF PTT ID and Emergency	
P25 Digital Conventional operation	
- 8 Status, 16 message	
- Call Alert encode and decode	
- Wireless Program Cloning	
Motorola SMARTNET II	
Motorola SmartZone	
Motorola OmniLink	
P25 Trunking	
Encryption	
DES, Motorola 12 KBS	
DES OFB, P25 standard	
AES, P25 standard	
16 encryption keys	
OTAR, P25 standard conventional	
OTAR, P25 standard trunked	

Radio must meet the follow RF specifications at a minimum.

RF Specification	VHF	UHF	700/800 MHz	Compliance Yes/No
General				
Frequency Range (maximum frequency separation)	136-174 MHz	380-470 MHz	762-806 806-870 MHz	
Frequency Range (maximum frequency separation)		450-512 MHz		
Channel Spacing	12.5KHz 25 KHz 30 KHz	12.5KHz 25 KHz	12.5KHz 25 KHz	
Receiver				
Sensitivity (-119 dBm)				
- Analog mode 12 dB SINAD	0.25uV	0.25uV	0.25uV	
- Digital P25 mode, 5% BER	0.25uV	0.25uV	0.25uV	
Selectivity				
- 25 KHz channel	-75 dB	-75 dB	-75 dB	
-12.5 KHz channel	-63 dB	-63 dB	-63 dB	
Spurious & Image Rejection	-75 dB	-75 dB	-75 dB	
Intermodulation	-78 db	-77 db	-75 db	
FM Hum & Noise				
- 25 KHz channel	-40 dB	-40 dB	-40 dB	
-12.5 KHz channel	-35 dB	-35 dB	-35 dB	
Audio Output Power	500 mW	500 mW	500 mW	
Audio Distortion	2%	2%	2%	
Frequency stability (-30 to +60 deg C)	±1.5ppm	±1.5ppm	±1.5ppm	
Transmitter				
RF Power Output Watts	5	4	2.5(700) 3.0(800)	
Conducted and Radiated Emissions	-75 dBc	-75 dBc	-75 dBc	
FM Hum & Noise				
- 25 KHz channel	-45 dB	-45 dB	-45 dB	
-12.5 KHz channel	-40 dB	-40 dB	-40 dB	
Audio Distortion	2%	2%	2%	
Audio Response	+1,-3 dB	+1,-3 dB	+1,-3 dB	
Modulation				
- 25/30 KHz channel	5.0 kHz	5.0 kHz	5.0 kHz	
- 12.5 KHz channel	2.5 kHz	2.5 kHz	2.5 kHz	
Frequency stability (-30 to +60 deg C)	±1.5ppm	±1.5ppm	±1.5ppm	

Other	**Compliance Yes/No**
Optional Accessories:	
Remote speaker mic with coiled cord	
Single unit rapid charger with conditioning	
Multi unit rapid charger with conditioning (min 4 radios)	
Mandown switch	
Programming	
PC programmable	
Radio Personality Cloning	
PC Tune software, ability to tune radio	
Warranty	
Standard one year parts and labor warranty	
Optional 1,2,3 year extended warranty	

Portables

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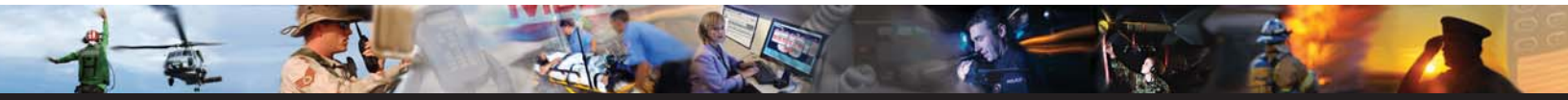


5100 Series Portable Radio

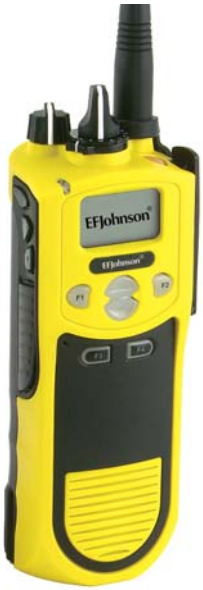
700/800 VHF UHF

EFJohnson's 5100 Series Portable Radio is rugged, lightweight, versatile, and designed to operate in analog and digital applications. It provides a seamless evolution to next generation networks while offering investment protection for your present communications system; all in a powerful software-controlled device that is easy on your mind and your budget. If you need a multi-protocol portable radio that leads the industry in feature richness and system interoperability, then the 5100 Series Portable Radio is your clear product choice.

Project 25 Compliance
Supports Project 25 CAI (Common Air Interface), Project 25 Trunked and Conventional system protocols, and Project 25 Over-The-Air Rekeying (OTAR) functionality.

Industry's Only SMARTNET® II / SmartZone® Licensee
Industry's only supplier licensed to support both analog and digital SMARTNET II and SmartZone trunking protocols.

Numerous Encryption Protocols
Supports industry standard encryption capabilities such as AES, DES-OFB, and DES.



EFJohnson is a leading provider of Project 25 compliant two-way radios and communication systems for law enforcement, fire fighters, EMS, and military.

More Key Features and Benefits

Multiple Configuration Offerings
Includes a Model II (display, basic keypad) and a Model III (display, DTMF keypad) version that features an enhanced backlit display and backlit keypad for easier viewing and usage.

Significant Product Flexibility
Enables programming of up to 512 channel/talkgroups, supports both narrowband (12.5 kHz) and wideband (25 kHz) channel spacing, and multiple system protocols.

Simplified Feature Modifications and Updates
Easy radio programming and feature updating using EFJohnson's PC Configure™ application.

Extensive Accessory Suite
Complete line of accessory products including speaker microphones, headsets, surveillance kits, batteries, chargers, carrying apparatus, and encryption "keyloading" devices.

Enhanced Product Robustness
Meets applicable Mil Standard 810C, D, E, and F specifications, as well as approved by Factory Mutual as intrinsically safe for use in hazardous environments.

5100 Series Portable Radio

Typical Performance Specifications

GENERAL	700/800	VHF	UHF R1	UHF R2
Frequency Range	762–806 MHz 806-870 MHz	136–174 MHz	380–470 MHz	450–512 MHz
Channel Spacing	12.5 kHz, 25 kHz	12.5 kHz, 25 kHz	12.5 kHz, 25 kHz	12.5 kHz, 25 kHz
Maximum Frequency Separation	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit
FCC Type Acceptance Certification	ATH2425171	ATH2425111	ATH2425131	ATH2425141
Industry Canada Type Certification	IC: 933B-2425171	IC: 933B-2425111	IC: 933B2425131	IC: 933B-2425141
FCC Emissions Designators	11K0F3E, 16K0F3E, 14K0F3E, 8K10F1E, 8K10F1D	16K0F3E, 11K0F3E, 8K10F1E, 8K10F1D	16K0F3E, 11K0F3E, 8K10F1E, 8K10F1D	16K0F3E, 11K0F3E, 8K10F1E, 8K10F1D
Input Voltage	7.2 V			
Dimensions (w/o antenna) (HxWxD)	6.7" x 2.52" x 1.9" (6.4 cm x 17.0 cm x 4.8 cm)			
Weight (with standard battery)	24 oz. (675 g)			
Case	Polycarbonate–black, yellow, orange			
Temperature Range	–30°C to +60°C			

TRANSMITTER				
RF Power Output	2.5/1 W (700 MHz), 3/1 W (800 MHz)	5/1 W	4/1 W	4/1 W
Frequency Stability (–30°C to +60°C)	±1.5 ppm	±1.5 ppm	±1.5 ppm	±1.5 ppm
Modulation Limiting				
25 kHz channels	±5 kHz	±5 kHz	±5 kHz	±5 kHz
12.5 kHz channels	±2.5 kHz	±2.5 kHz	±2.5 kHz	±2.5 kHz
Emissions (Conducted/Radiated)	–75 dBc	–75 dBc	–75 dBc	–75 dBc
Audio Response	+1, -3dB	+1, -3dB	+1, -3dB	+1, -3dB
FM Hum and Noise				
25 kHz channels	-45 dB	-45 dB	-45 dB	-45 dB
12.5 kHz channels	-40 dB	-40 dB	-40 dB	-40 dB
Audio Distortion	2%	2%	2%	2%

RECEIVER				
Audio Output Power	500 mW	500 mW	500 mW	500 mW
Frequency Stability (–30°C to +60°C)	±1.5 ppm	±1.5 ppm	±1.5 ppm	±1.5 ppm
Sensitivity				
Analog Mode: 12 dB SINAD	0.25 uV (-119 dBm)	0.35 uV (-116 dBm)	0.35 uV (-116 dBm)	0.35 uV (-116 dBm)
Digital Mode: 5% BER	0.25 uV (-119 dBm)	0.35 uV (-116 dBm)	0.35 uV (-116 dBm)	0.35 uV (-116 dBm)
Selectivity				
25 kHz channels	-75 dB	-75 dB	-75 dB	-75 dB
12.5 kHz channels	-63 dB	-63 dB	-63 dB	-63 dB
Intermodulation	–75 dB	–75 dB	–75 dB	–75 dB
Spurious & Image Rejection	–75 dB	–75 dB	–75 dB	–75 dB
FM Hum and Noise				
25 kHz channels	-40 dB	-40 dB	-40 dB	-40 dB
12.5 kHz channels	-35 dB	-35 dB	-35 dB	-35 dB
Audio Distortion	2%	2%	2%	2%

All specifications are measured per TIA 102.CAAA, TIA 102.CAAB and per TIA 603 standards.

BATTERIES

Battery Type	Dimensions (HxWxD)	Weight	Aprox. Life (5/5/90) (With Encryption/Without Encryption)
Extra-High Capacity NiMH	6.0" x 2.3" x 0.85"	0.81 lbs	12 hrs/13 hrs
Extra-High Capacity NiMH	FM 6.0" x 2.3" x 0.85"	0.81 lbs	12 hrs/13 hrs
Alkaline Battery Clamshell	7.2" x 2.6" x 2.0"	0.98 lbs (w/12 AA batt.)	14-16 hrs/16-18 hrs

ENVIRONMENTAL SPECIFICATIONS

Environment	Mil Spec 810C		Mil Spec 810D		Mil Spec 810E		Mil Spec 810F	
	M	P	M	P	M	P	M	P
Low Pressure	500.1	I	500.2	II	500.3	II	500.4	II
High Temp.	501.1	I	501.2	I, II	501.3	I, II	501.4	I, II
Low Temp.	502.1	I	502.2	I, II	502.3	I, II	502.4	I, II
Temp. Shock	503.1	I	503.2	I	503.3	I	503.4	I
Solar Radiation	505.1	I	505.2	I	505.3	I	505.4	I
Rain/Blown Rain	506.1	I, II	506.2	II	506.3	I, II	506.4	I, II
Humidity	507.1	II	507.2	II, III	507.3	II, III		
Salt Fog	509.1	I	509.2	I	509.3	I		
Dust and Sand	510.1	I	510.2	I	510.3	I	510.4	I
Vibration	514.2	VII, VIII	514.3	I(8)	514.4	I(8)	514.5	I(24)
Shock	516.2	I, II, V	516.3	I, IV, VI	516.4	I, IV, VI	516.5	I, IV, VI

M=Method P=Procedure

ENCRYPTION OPTIONS

Supported Encryption Algorithms	DES, DES-OFB, AES
Encryption Algorithm Capacity	4 Maximum
Encryption Keys/Radio	16 Common Key Reference (CKR) 16 Physical Identifier (PID)
Encryption Frame Re-sync Interval	P25 CAI 360 msec
Encryption Keying	External Key Loader, OTAR
Synchronization	CFB – Cipher Feedback OFB – Output Feedback
Vector Generator	National Institute of Standards and Technology (NIST) approved random number generator
Encryption Type	Digital
Key Erasure	Keyboard Command
Code Key Initialization	Internal pseudorandom generator
Standards	FIPS 46-3, FIPS 81, FIPS 140-2, FIPS 197

FACTORY MUTUAL APPROVALS

Intrinsically Safe

Class I	**Division 1** An area where there is or could be an explosive atmosphere most of the time in normal conditions.	C Ethylene D Propane and Methane E Conductive metal F Carbonaceous material coal, coke dust
Class II		G Grain dust and flour
Class III	**Division 1** Location in which easily ignitable fibers or materials producing combustible flyings are handled, manufactured, or used.	Ignitable fibers or flyings

Non-Incendive

Class I	**Division 2** An area where an explosive atmosphere exists only as a result of a fault.	A Acetylene B Hydrogen C Ethylene D Propane and Methane

FM APPROVED

Form S494p 10/03/05 (Supersedes 9/20/05) Printed in U.S.A. Specifications subject to change without notice.

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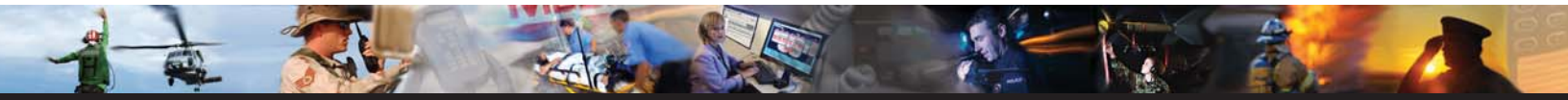

51SL Series Portable Radio

700/800 VHF UHF

EFJohnson's 51SL Series Portable Radio is rugged, lightweight, versatile, and designed to operate in analog and digital applications. It provides a seamless evolution to next generation networks while offering investment protection for your present communications system; all in a powerful software-controlled device that is easy on your mind and your budget. If you need a multi-protocol portable radio that leads the industry in feature richness and system interoperability, then the 51SL Series Portable Radio is your clear product choice.

Project 25 Compliance

Supports Project 25 CAI (Common Air Interface), Project 25 Trunked and Conventional system protocols, and Project 25 Over-The-Air Rekeying (OTAR) functionality.

Industry's Only SMARTNET® II / SmartZone® Licensee

Industry's only supplier licensed to support both analog and digital SMARTNET II and SmartZone trunking protocols.

Numerous Encryption Protocols

Supports industry standard software encryption capabilities such as DES-OFB, and DES.

EFJohnson is a leading provider of Project 25 compliant two-way radios and communication systems for law enforcement, fire fighters, EMS, and military.

More Key Features and Benefits

Multiple Configuration Offerings

Includes a Model II (display, basic keypad) and a Model III (display, DTMF keypad) version that features an enhanced backlit display and backlit keypad for easier viewing and usage.

Significant Product Flexibility

Enables programming of up to 512 channel/talkgroups, supports both narrowband (12.5 kHz) and wideband (25 kHz) channel spacing, and multiple system protocols.

Simplified Feature Modifications and Updates

Easy radio programming and feature updating using EFJohnson's PC Configure™ application.

Extensive Accessory Suite

Complete line of accessory products including speaker microphones, headsets, surveillance kits, batteries, chargers, carrying apparatus, and encryption "keyloading" devices.

Enhanced Product Robustness

Meets applicable Mil Standard 810C, D, E, and F specifications, as well as approved by Factory Mutual as intrinsically safe for use in hazardous environments.

51SL Series Portable Radio

Typical Performance Specifications

GENERAL	700/800	VHF	UHF R1	UHF R2
Frequency Range	762–806 MHz 806-870 MHz	136–174 MHz	380–470 MHz	450–512 MHz
Channel Spacing	12.5 kHz, 25 kHz	12.5 kHz, 25 kHz	12.5 kHz, 25 kHz	12.5 kHz, 25 kHz
Maximum Frequency Separation	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit
FCC Type Acceptance Certification	ATH2425171	ATH2425111	ATH2425131	ATH2425141
Industry Canada Type Certification	IC: 933B-2425171	IC: 933B-2425111	IC: 933B2425131	IC: 933B-2425141
FCC Emissions Designators	11K0F3E, 16K0F3E, 14K0F3E, 8K10F1E, 8K10F1D	16K0F3E, 11K0F3E, 8K10F1E, 8K10F1D	16K0F3E, 11K0F3E, 8K10F1E, 8K10F1D	16K0F3E, 11K0F3E, 8K10F1E, 8K10F1D
Input Voltage	7.2 V			
Dimensions (w/o antenna) (HxWxD)	6.7" x 2.52" x 1.9" (6.4 cm x 17.0 cm x 4.8 cm)			
Weight (with standard battery)	24 oz. (675 g)			
Case	Polycarbonate–black			
Temperature Range	–30°C to +60°C			

TRANSMITTER				
RF Power Output	2.5/1 W (700 MHz), 3/1 W (800 MHz)	5/1 W	4/1 W	4/1 W
Frequency Stability (–30°C to +60°C)	±1.5 ppm	±1.5 ppm	±1.5 ppm	±1.5 ppm
Modulation Limiting				
25 kHz channels	±5 kHz	±5 kHz	±5 kHz	±5 kHz
12.5 kHz channels	±2.5 kHz	±2.5 kHz	±2.5 kHz	±2.5 kHz
Emissions (Conducted/Radiated)	–75 dBc	–75 dBc	–75 dBc	–75 dBc
Audio Response	+1, -3dB	+1, -3dB	+1, -3dB	+1, -3dB
FM Hum and Noise				
25 kHz channels	-45 dB	-45 dB	-45 dB	-45 dB
12.5 kHz channels	-40 dB	-40 dB	-40 dB	-40 dB
Audio Distortion	2%	2%	2%	2%

RECEIVER				
Audio Output Power	500 mW	500 mW	500 mW	500 mW
Frequency Stability (–30°C to +60°C)	±1.5 ppm	±1.5 ppm	±1.5 ppm	±1.5 ppm
Sensitivity				
Analog Mode: 12 dB SINAD	0.25 uV (-119 dBm)	0.35 uV (-116 dBm)	0.35 uV (-116 dBm)	0.35 uV (-116 dBm)
Digital Mode: 5% BER	0.25 uV (-119 dBm)	0.35 uV (-116 dBm)	0.35 uV (-116 dBm)	0.35 uV (-116 dBm)
Selectivity				
25 kHz channels	-75 dB	-75 dB	-75 dB	-75 dB
12.5 kHz channels	-63 dB	-63 dB	-63 dB	-63 dB
Intermodulation	–75 dB	–75 dB	–75 dB	–75 dB
Spurious & Image Rejection	–75 dB	–75 dB	–75 dB	–75 dB
FM Hum and Noise				
25 kHz channels	-40 dB	-40 dB	-40 dB	-40 dB
12.5 kHz channels	-35 dB	-35 dB	-35 dB	-35 dB
Audio Distortion	2%	2%	2%	2%

All specifications are measured per TIA 102.CAAA, TIA 102.CAAB and per TIA 603 standards.

BATTERIES			
Battery Type	Dimensions (HxWxD)	Weight	Aprox. Life (5/5/90) (With Encryption/Without Encryption)
Extra-High Capacity NiMH	6.0" x 2.3" x 0.85"	0.81 lbs	12 hrs/13 hrs
Extra-High Capacity NiMH	FM 6.0" x 2.3" x 0.85"	0.81 lbs	12 hrs/13 hrs
Alkaline Battery Clamshell	7.2" x 2.6" x 2.0"	0.98 lbs (w/12 AA batt.)	14-16 hrs/16-18 hrs

ENVIRONMENTAL SPECIFICATIONS

Environment	Mil Spec 810C		Mil Spec 810D		Mil Spec 810E		Mil Spec 810F	
	M	P	M	P	M	P	M	P
Low Pressure	500.1	I	500.2	II	500.3	II	500.4	II
High Temp.	501.1	I	501.2	I, II	501.3	I, II	501.4	I, II
Low Temp.	502.1	I	502.2	I, II	502.3	I, II	502.4	I, II
Temp. Shock	503.1	I	503.2	I	503.3	I	503.4	I
Solar Radiation	505.1	I	505.2	I	505.3	I	505.4	I
Rain/Blown Rain	506.1	I, II	506.2	II	506.3	I, II	506.4	I, II
Humidity	507.1	II	507.2	II, III	507.3	II, III		
Salt Fog	509.1	I	509.2	I	509.3	I		
Dust and Sand	510.1	I	510.2	I	510.3	I	510.4	I
Vibration	514.2	VII, VIII	514.3	I(8)	514.4	I(8)	514.5	I(24)
Shock	516.2	I, II, V	516.3	I, IV, VI	516.4	I, IV, VI	516.5	I, IV, VI

M=Method P=Procedure

ENCRYPTION OPTIONS

Supported Encryption Algorithms	DES, DES-OFB
Encryption Algorithm Capacity	4 Maximum
Encryption Keys/Radio	16 Common Key Reference (CKR) 16 Physical Identifier (PID)
Encryption Frame Re-sync Interval	P25 CAI 360 msec
Encryption Keying	External Key Loader, OTAR
Synchronization	CFB – Cipher Feedback OFB – Output Feedback
Vector Generator	National Institute of Standards and Technology (NIST) approved random number generator
Encryption Type	Digital
Key Erasure	Keyboard Command
Code Key Initialization	Internal pseudorandom generator

FACTORY MUTUAL APPROVALS

Intrinsically Safe

Class I	Division 1 An area where there is or could be an explosive atmosphere most of the time in normal conditions.	C Ethylene D Propane and Methane E Conductive metal F Carbonaceous material coal, coke dust
Class II		G Grain dust and flour
Class III	Division 1 Location in which easily ignitable fibers or materials producing combustible flyings are handled, manufactured, or used.	Ignitable fibers or flyings

Non-Incendive

Class I	Division 2 An area where an explosive atmosphere exists only as a result of a fault.	A Acetylene B Hydrogen C Ethylene D Propane and Methane

FM APPROVED

Form S557 9/05 (Supersedes 4/05) Printed in U.S.A. Specifications subject to change without notice.

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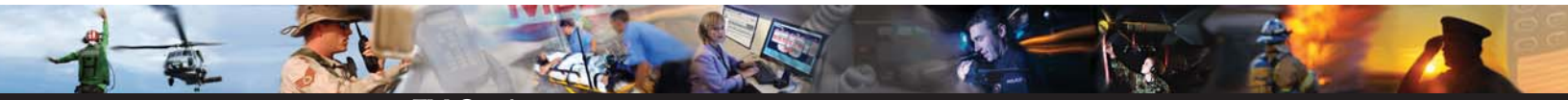


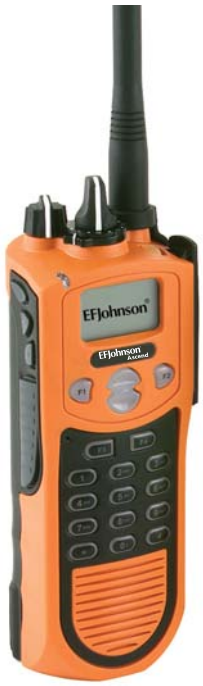
Ascend™ Series Portable Radio 700/800 900

EFJohnson's Ascend™ Series Portable Radio is rugged, lightweight, and versatile and is primarily designed for Multi-Net® LMR applications. A significant additional benefit of this radio is that it is also a multi-protocol device, which means that the radio can operate on conventional and trunking infrastructures, and in both analog and digital applications. It provides a seamless evolution to next generation networks while offering investment protection for your present communications system; all in a powerful software-controlled device that is easy on your mind and your budget. If you need a Multi-Net portable radio that leads the industry in feature richness, multi-protocol capability, and system interoperability, then the Ascend Series Portable Radio is your clear product choice.

Multi-Net Compatibility
Provides a next generation product that supports the Multi-Net Trunked system protocol.

Project 25 Compliance
Supports Project 25 CAI (Common Air Interface), Project 25 Trunked and Conventional system protocols.

Industry's only SMARTNET® II / SmartZone® Licensee
Industry's only supplier licensed to support both analog and digital SMARTNET II and SmartZone trunking protocols.



EFJohnson is a leading provider of Project 25 compliant two-way radios and communication systems for law enforcement, fire fighters, EMS, and military.

More Key Features and Benefits

Multiple Configuration Offerings
Includes a Model II (display, basic keypad) and a Model III (display, DTMF keypad) version that features an enhanced backlit display and backlit keypad for easier viewing and usage.

Significant Product Flexibility
Enables programming of up to 512 channel/talkgroups, supports both narrowband (12.5 kHz) and wideband (25 kHz) channel spacing, and multiple system protocols.

Simplified Feature Modifications and Updates
Easy radio programming and feature updating using EFJohnson's PC Configure™ application.

Extensive Accessory Suite
Complete line of accessory products including speaker microphones, headsets, surveillance kits, batteries, chargers, carrying apparatus, and encryption "keyloading" devices.

Enhanced Product Robustness
Meets applicable Mil Standard 810C, D, E, and F specifications, as well as approved by Factory Mutual as intrinsically safe for use in hazardous environments.

Ascend™ Series Portable Radio

Typical Performance Specifications

GENERAL	700/800	900
Frequency Range	762–806 MHz 806-870 MHz	896-940 MHz
Channel Spacing	12.5 kHz, 25 kHz	12.5 kHz
Maximum Frequency Separation	Full Bandsplit	Full Bandsplit
FCC Type Acceptance Certification	ATH2425171	ATH2425191
Industry Canada Type Certification	IC: 933B-2425171	
FCC Emissions Designators	11K0F3E, 16K0F3E, 14K0F3E, 8K10F1E, 8K10F1D	11K0F3E, 8K10F1E, 8K10F1D
Input Voltage	7.2 V	
Dimensions (w/o antenna) (HxWxD)	6.7" x 2.52" x 1.9" (6.4 cm x 17.0 cm x 4.8 cm)	
Weight (with standard battery)	24 oz. (675 g)	
Case	Polycarbonate–black, yellow, orange	
Temperature Range	–30°C to +60°C	

TRANSMITTER		
RF Power Output	2.5/1 W (700 MHz), 3/1 W (800 MHz)	2.5/1 W
Frequency Stability (–30°C to +60°C)	±1.5 ppm	±1.5 ppm
Modulation Limiting		
25 kHz channels	±5 kHz	
12.5 kHz channels	±2.5 kHz	±2.5 kHz
Emissions (Conducted/Radiated)	–75 dBc	–70 dBc
Audio Response	+1, -3dB	+1, -3dB
FM Hum and Noise		
25 kHz channels	-45 dB	
12.5 kHz channels	-40 dB	-35 dB
Audio Distortion	2%	2%

RECEIVER		
Audio Output Power	500 mW	500 mW
Frequency Stability (–30°C to +60°C)	±1.5 ppm	±1.5 ppm
Sensitivity		
Analog Mode: 12 dB SINAD	0.25 uV (-119 dBm)	0.25 uV (-119 dBm)
Digital Mode: 5% BER	0.25 uV (-119 dBm)	0.25 uV (-119 dBm)
Selectivity		
25 kHz channels	-75 dB	
12.5 kHz channels	-63 dB	-63 dB
Intermodulation	–75 dB	–75 dB
Spurious & Image Rejection	–75 dB	–75 dB
FM Hum and Noise		
25 kHz channels	-40 dB	
12.5 kHz channels	-35 dB	-35 dB
Audio Distortion	2%	2%

All specifications are measured per TIA 102.CAAA, TIA 102.CAAB and per TIA 603 standards.

ENVIRONMENTAL SPECIFICATIONS

Environment	Mil Spec 810C		Mil Spec 810D		Mil Spec 810E		Mil Spec 810F	
	M	P	M	P	M	P	M	P
Low Pressure	500.1	I	500.2	II	500.3	II	500.4	II
High Temp.	501.1	I	501.2	I, II	501.3	I, II	501.4	I, II
Low Temp.	502.1	I	502.2	I, II	502.3	I, II	502.4	I, II
Temp. Shock	503.1	I	503.2	I	503.3	I	503.4	I
Solar Radiation	505.1	I	505.2	I	505.3	I	505.4	I
Rain/Blown Rain	506.1	I, II	506.2	II	506.3	I, II	506.4	I, II
Humidity	507.1	II	507.2	II, III	507.3	II, III		
Salt Fog	509.1	I	509.2	I	509.3	I		
Dust and Sand	510.1	I	510.2	I	510.3	I	510.4	I
Vibration	514.2	VII, VIII	514.3	I(8)	514.4	I(8)	514.5	I(24)
Shock	516.2	I, II, V	516.3	I, IV, VI	516.4	I, IV, VI	516.5	I, IV, VI

M=Method P=Procedure

FACTORY MUTUAL APPROVALS

Intrinsically Safe

Class I	**Division 1** An area where there is or could be an explosive atmosphere most of the time in normal conditions.	C Ethylene D Propane and Methane E Conductive metal F Carbonaceous material coal, coke dust
Class II		G Grain dust and flour
Class III	**Division 1** Location in which easily ignitable fibers or materials producing combustible flyings are handled, manufactured, or used.	Ignitable fibers or flyings

Non-Incendive

Class I	**Division 2** An area where an explosive atmosphere exists only as a result of a fault.	A Acetylene B Hydrogen C Ethylene D Propane and Methane

FM APPROVED

BATTERIES

Battery Type	Dimensions (HxWxD)	Weight	Aprox. Life (5/5/90) (With Encryption/Without Encryption)
Extra-High Capacity NiMH	6.0" x 2.3" x 0.85"	0.81 lbs	12 hrs/13 hrs
Extra-High Capacity NiMH	FM 6.0" x 2.3" x 0.85"	0.81 lbs	12 hrs/13 hrs
Alkaline Battery Clamshell	7.2" x 2.6" x 2.0"	0.98 lbs (w/12 AA batt.)	14-16 hrs/16-18 hrs

Form S534 3/05 (Supersedes 6/04) Printed in U.S.A. Specifications subject to change without notice.

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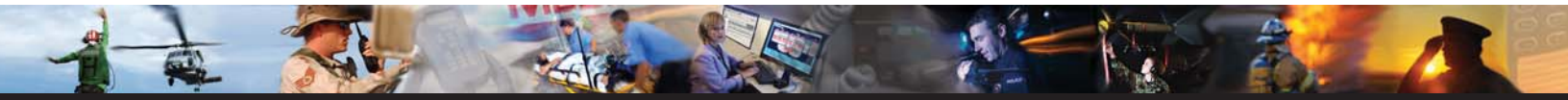

5100 Series Portable Radio Accessories 700/800 VHF UHF

EFJohnson's 5100 Series Portable Radio is supported by a complete suite of accessory products. Included in this suite are antennas, speaker microphones, headsets, surveillance kits, batteries, chargers, carrying apparatus, encryption "keyloading" devices, and programming accessories.

Additionally, EFJohnson has developed significant relationships with many of the industry's leading accessory vendors to ensure that the 5100 Series Portable Radio is interoperable in "specialized" LMR market applications. Such applications include operation in high noise, HAZMAT, and extreme surveillance environments.

EFJohnson is a leading provider of Project 25 compliant two-way radios and communication systems for law enforcement, fire fighters, EMS, and military.

Key Accessory Types

Antennas
A variety of products including 700/800 MHz, VHF, and UHF antennas.

Audio
Complete line of speaker microphones, headsets, and surveillance kits.

Batteries
Numerous battery capacity and chemistry types, as well as an Alkaline Battery Clamshell product when charging capabilities are not available.

Chargers
Extensive charger offerings including 120/230V operation, single and multi-bay configurations, wall mounting apparatus, and vehicular chargers.

Carrying Apparatus
Multiple carrying choices including cases, belt loops, and belt clips.

Encryption "Keyloading" Devices
The Subscriber Management Assistant (SMA), provides an encryption keyloading application for EFJohnson radios.

Programming
Easy radio programming and feature upgrading using EFJohnson's PC Configure ™ application.

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#537 3/05 Supersedes 6/04

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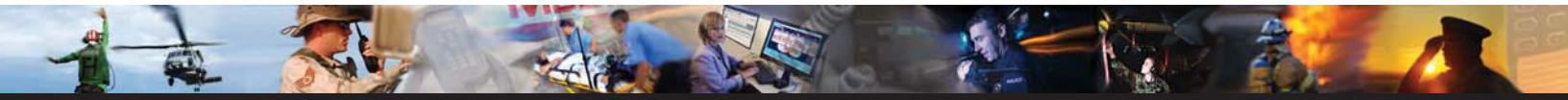

Subscriber Management Assistant

The EFJohnson® Subscriber Management Assistant (SMA) is a versatile tool, but its predominant function is for fast and easy encryption key loading. Since the SMA uses PDA technology in a ruggedized case, it can be used in almost any environment. The SMA connects to an EFJohnson or Motorola® radio via a serial interface. All configuration and modifications are completed through the serial interface. It uses the FIPS validated SEM security algorithms for all security functions, including AES and DES. With its Microsoft Windows® based graphical user interface, the SMA will have you configuring your radios right away.

The SMA enables you to:

- Generate a random DES Key or AES Keys for download to the EFJohnson and Motorola portable radios that are in CKR mode
- Enter your own AES or DES key for download into a portable radio
- Use the Microsoft SQL CE database for storage of security parameters such as AES and DES keys

Connect to radios

For keyloading functionality, the SMA connects to radios via a special keyloader cable.

EFJohnson is a leading provider of Project 25 compliant two-way radios and communication systems for law enforcement, fire fighters, EMS, and military.

More Key Features and Benefits

- Minimize your learning curve with an intuitive graphical interface
- Read radio key set information
- Erase all keys from a radio
- Retrieve hardware revision information from the radio
- Select a key set and make that key set active, modify and set KEK parameters, set KMF parameters on the radio, and set or modify RSI parameters
- Create a new database containing security parameters such as AES and DES keys
- Delete or modify an existing database containing security parameters such as AES and DES keys
- Encrypt all keys stored in the SQL CE using a 256-bit AES key

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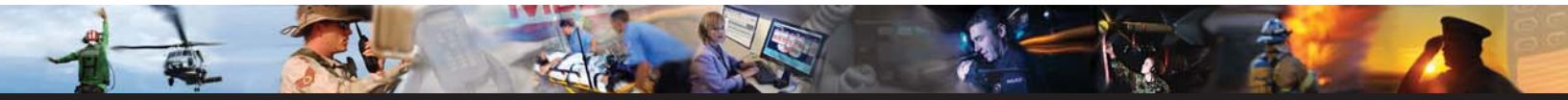
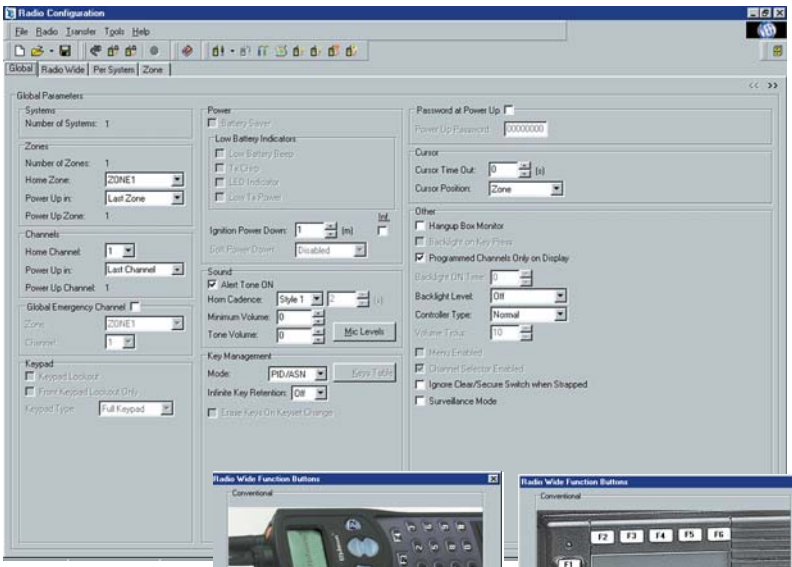


5100 Series 5300 Series Programming Software

EFJohnson's PC Configure™ software is the most user-friendly programming software for public safety and service radio users. Program all of your EFJohnson® mobile and portable radios quickly and easily with the same software package. With minimal setup time or training, PC Configure gives you the flexibility to program your EFJohnson® 5100 Series Portable and 5300 Series Mobile radios for any encryption or system type installed on the radio.

PC Configure is a Windows®-based application. With its intuitive and unique graphical display, PC Configure allows you to re-reflash radios much faster than any other radio programming software. PC Configure's "remember" function stores previously programmed parameters (such as software version or options) and recalls them for future use.

Manage encryption keys, channels, zones, and other vital radio functions – all from your PC



Simplify radio programming with a click of a mouse

EFJohnson is a leading provider of Project 25 compliant two-way radios and communication systems for law enforcement, fire fighters, EMS, and military.

More Key Features and Benefits

- Minimize your learning curve with an intuitive graphical interface
- Configure mobile and portable radios with a single software package
- Switch between radio and system parameters, and program zone and channel properties with the click of a mouse
- Program your radios in analog conventional, Multi-Net®, Project 25 conventional and trunking, and SMARTNET®/SmartZone®
- Use one template to program multiple radios – simply change unit IDs and download the file to each radio

Computer Requirements

800 MHz Pentium or greater
128 MB RAM
40 MB hard disk space
CD-ROM drive

The portability of the software lets you program your radios anywhere.

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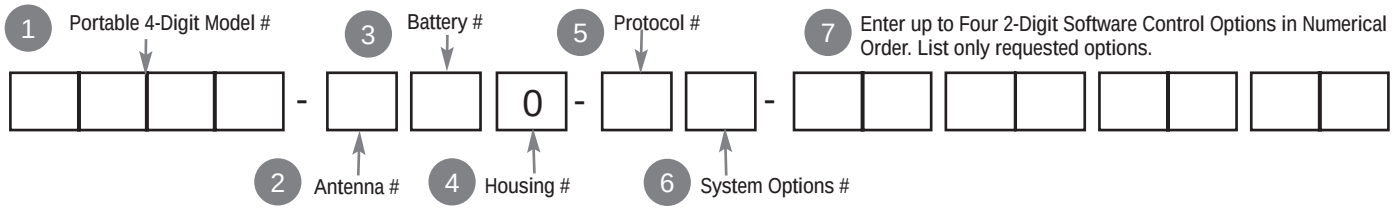
51SL Series Portable Radio

EFJohnson®

Price List

APCO Project 25/SMARTNET®/SMARTZONE®

How to Make a Model String - Select Portable and Options, Enter Numbers in these Boxes.



Step 1 Select One Portable Base Model, Either Standard or Intrinsically Safe Model

Base model includes radio, 512 channels/talkgroups, battery, and standard belt clip.

		List Price
Standard Model		
5212	VHF, 5W, 136-174 MHz, Model II	$ 1,325
5213	VHF, 5W, 136-174 MHz, Model III	1,500
5222	UHF, 4W, 380-470 MHz, Model II	1,325
5223	UHF, 4W, 380-470 MHz, Model III	1,500
5242 *	UHF, 4W, 450-512 MHz, Model II	1,325
5243 *	UHF, 4W, 450-512 MHz, Model II	1,500
5272	700/800 MHz, 762-806 MHz, 2.5W, and 806-870 MHz, 3W, Model II	1,325
5273	700/800 MHz, 762-806 MHz, 2.5W, and 806-870 MHz, 3W, Model III	1,500
Intrinsically Safe Model		
5216	VHF, 5W, 136-174 MHz, Model II	$ 1,375
5217	VHF, 5W, 136-174 MHz, Model III	1,550
5226	UHF, 4W, 380-470 MHz, Model II	1,375
5227	UHF, 4W, 380-470 MHz, Model III	1,550
5246 *	UHF, 4W, 450-512 MHz, Model II	1,375
5247 *	UHF, 4W, 450-512 MHz, Model III	1,550
5276	700/800 MHz, 762-806 MHz, 2.5W, and 806-870 MHz, 3W, Model II	1,375
5277	700/800 MHz, 762-806 MHz, 2.5W, and 806-870 MHz, 3W, Model III	1,550

Step 2 Select an Antenna

1	VHF – 136-151 MHz	N/C
2	VHF – 151-162 MHz	N/C
3	VHF – 162-174 MHz	N/C
4	UHF – 380-520 MHz	N/C
6	VHF – 136-174 (VHF Wideband)	$ 15
8	700/800 MHz, 1/2 Wave	N/C
9	700/800 MHz, 1/4 Wave	N/C

*Check for availability before ordering.

Antenna

Radio Model # ☐☐☐☐ - ☐ - ▬▬ - ▬▬ - ▬▬ ▬▬ ▬▬ ▬▬

Enter Portable Radio Model Price $ _____

Antenna Price $ _____

Total of Portable Radio Model Price and Antenna Price in Box A → $

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51SL Series Portable Radio

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Price List

Step 3 Select a Battery

		List Price
1	Extra-High Capacity Battery Pack, NiMH	N/C
2	Alkaline Battery Clamshell	$ 150
6	Extra-High Capacity Battery Pack, NiMH, I/S	N/C

Step 4 Housing

0	Black Housing	N/C

Step 5 Select the Protocol

1	Analog FM	N/C
2	Project 25 Digital CAI (Common Air Interface, Includes Protocol Option 1)	$ 350

Step 6 Select the System Option

0	Conventional System	$ 550
1	SMARTNET® II Trunking (Includes System Option 0)	600
2	SmartZone® Trunking (Includes System Option 0 and 1)	750
3	SmartZone Trunking and Project 25 Trunking (Includes System Option 0, 1 and 2)	975
5	Project 25 Only Trunking (Includes System Option 0)	775

Step 7 Select Software Control Options, May Select up to Four Options

06	DES/ DES-OFB Encryption	$ 550
11	Project 25 OTAR Conventional and Trunking	750
13	Project 25 Data Conventional **	TBD
14	Project 25 Data Trunking** (Requires System Option 3 or 4)	TBD
50	Zone Fail-Site Lock (Requires System Option 2 or 3)	150
60	MDC1200 Compatibility	50

Step 8 Enter Prices, then Total

51SL Series Portable Radio Model and Antenna Price from Box A (Previous Page)	$ _____
Battery Price	$ _____
Protocol Price	$ _____
System Option Price	$ _____
Total Price of all Software Control Options (Up to 4)	$ _____
TOTAL PRICE	$

** Future Option

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